

# MISSOURI CONSERVATIONIST

VOLUME 84, ISSUE 8, AUGUST 2023  
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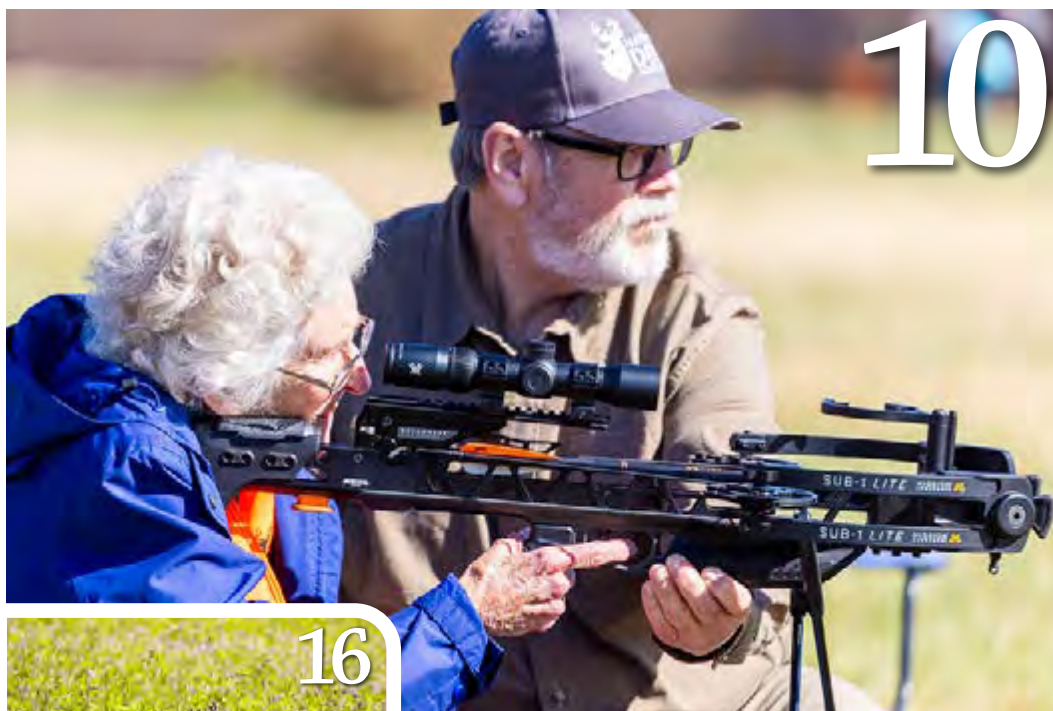


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AUGUST 2023  
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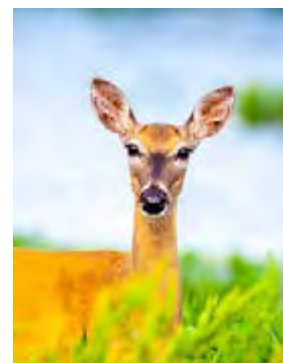
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## MISSOURI CONSERVATIONIST



### ON THE COVER

A doe pauses and scans her surroundings.

#### 📷 NOPPADOL PAOTHONG

1000mm lens, f/8  
1/640 sec, ISO 800

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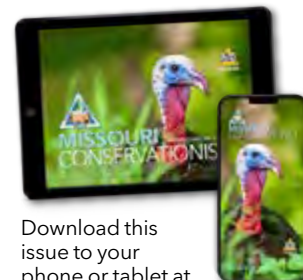
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# Inbox



## Letters to the Editor

Submissions reflect readers' opinions and may be edited for length and clarity. Email [Magazine@mdc.mo.gov](mailto:Magazine@mdc.mo.gov) or write to us:

MISSOURI  
CONSERVATIONIST  
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JEFFERSON CITY, MO 65102

## BEAUTIFUL BAMBOO

The May article about Bill Lamberson's handmade bamboo fishing rods was excellent [*The Angler's Elegance*, Page 20]. I also enjoyed the close-up photos that were with the article. It was so informative.

B. Doshi  
Fenton

## SMILING STUDENTS OF NATURE

I've been a reader for many years. Although I'm not a hunter or fisherman, I do enjoy the outdoors.

I have to say the photo on the front of the June issue made me smile. I read the description on the inside, but I took it in a different way. It made me think that I "toad-ally" love your magazine because it reminded me of two toads hugging!

Keep up the good work. It keeps us informed and smiling.

Marilee Reeds Wentzville



## NOTHING BEATS MISSOURI

Having lived in Missouri for 15 years, we greatly enjoyed this magazine. You do a wonderful job. And what a beautiful selection of nature photos! Especially the June 2023 issue.

Since we moved to Alabama, we still enjoy the magazine. Thanks for the good work. Keep it up. We look forward to future issues.

There's no other state quite like good old Missouri.

Minerva Habegger Alabama

## CORRECTION

In the July *Nature Lab* [Page 4], we provided a website address for the Idalia Society in Kansas City that has closed. To contact the Idalia Society, email [idaliasociety@yahoo.com](mailto:idaliasociety@yahoo.com) or find them on Facebook at Idalia Society of Mid-American Lepidopterists.

## Connect With Us!



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## Have a Question for a Commissioner?

Send a note using our online contact form at [mdc.mo.gov/commissioners](http://mdc.mo.gov/commissioners).

## MISSOURI CONSERVATION COMMISSIONERS



The Missouri Department of Conservation protects and manages the fish, forest, and wildlife of the state. We facilitate and provide opportunity for all citizens to use, enjoy, and learn about these resources.





### Want to see your photos in the Missouri Conservationist?

Share your photos on Flickr at  
[flickr.com/groups/mdcreaderphotos-2023](https://www.flickr.com/groups/mdcreaderphotos-2023)  
or email [Readerphoto@mdc.mo.gov](mailto:Readerphoto@mdc.mo.gov).

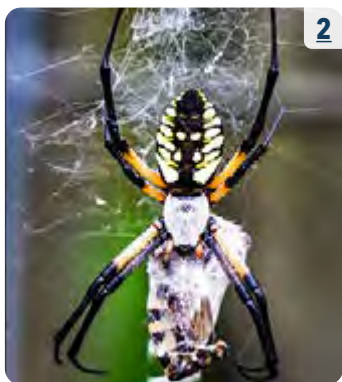


1

1 | Juvenile  
eastern bluebird  
by **Michael  
Layne**, via Flickr

2 | Black and  
yellow garden  
spider by **Tony  
Cook**, via Flickr

3 | Swamp  
milkweed at  
Ted Shanks CA  
by **Stephanie  
Bogue**, via Flickr



2



3



### Want another chance to see your photos in the magazine?

➔ In the December issue, we plan to feature even more great reader photos. Use the submission methods above to send us your best year-round pictures of native Missouri wildlife, flora, natural scenery, and friends and family engaged in outdoor activities. Please include where the photo was taken and what it depicts.

TAYLOR LYNN PHOTOGRAPHY



# Up Front

with Sara Parker Pauley

✳ The old cemetery at the end of my grandparents' road was a place of great intrigue. By day, I'd stroll among the headstones and imagine the life stories of the names I saw etched there. But by night, largely due to my brothers' capacity for ghost stories, it took on an unwelcoming aura. (More on the welcoming aspects of nature found in cemeteries on Page 21).

I've always considered myself a morning girl, but when life takes me out of this rhythm, there are grand rewards for venturing outdoors at night — from the chilling nocturnal calls of the wild and the brilliance of falling stars, to the moonlight migration of geese. Writer Henry Beston asks, "Are modern folk, perhaps, afraid of the night? Do they fear that vast serenity, the mystery of infinite space, the austerity of the stars?"

Since nature never sleeps, neither does the work of the Missouri Department of Conservation. Long after I've called it a day, there are MDC team members just getting started. Conservation agents patrol and protect our wildlife all times of the day and night and hatchery staff work round the clock to ensure our warm- and cold-water hatchery-raised fish are ready for stocking. From biologists surveying frogs or bats to team members committed to deer and waterfowl management, graveyard shifts are a necessity in this line of work.

Here's to the night owls of conservation — for their passion and dedication — and for being a light shining in the darkness of night.

*Sara Parker Pauley*

**SARA PARKER PAULEY**, DIRECTOR

[SARA.PAULEY@MDC.MO.GOV](mailto:SARA.PAULEY@MDC.MO.GOV)

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# Nature LAB<sup>at</sup> WORK

by Angie Daly Morfeld

The Missouri Department of Conservation team and its partner organizations are diverse and dedicated to conserving, protecting, and improving our fish, forest, and wildlife resources.

## Dana Ripper

### CO-DIRECTOR OF THE MISSOURI RIVER BIRD OBSERVATORY

✳ Dana Ripper co-founded the Missouri River Bird Observatory (MRBO) in 2010 with her husband, Ethan Duke. The nonprofit grew from their bird banding operation at the Grand Pass Conservation Area (CA) in Saline County.

**"Whether it's grassland science or education projects, neither would be possible without partnering with MDC."**

— Dana Ripper

#### Teamwork Makes the Dream Work

"Our work with MDC has been critical to the development of the Missouri River Bird Observatory," Dana said.

Their first partnership with MDC was an education grant. The funding allowed them to bring children to Grand Pass CA for hands-on learning in nature.

In 2013, MRBO partnered with MDC to survey grassland birds on MDC lands and partnering private lands. Grassland birds are among the most imperiled birds in the United States. This 10-year statewide study not only provides information on bird populations but informs proper habitat management.



**Dana Ripper (right) and Ethan Duke, co-founders of the Missouri River Bird Observatory, on Drovers Prairie, one of the grassland project study sites.**

#### Committed to Conservation

Conservation is at the root of all MRBO's work. If it doesn't have a clear application to conservation, we don't do it, Dana says.

"We are all living in a time of a major tipping point," Dana said. "We are in a climate crisis, habitats are imperiled, and almost all species — birds, plants, insects — are in decline. It requires constant vigilance to keep species from declining any further."

#### How You Can Help

Visit the MRBO website at [mrbo.org](http://mrbo.org). There you can contribute to their work, find out about upcoming events, sign up for information, and more.

"Education is key," Dana said. "Educate yourselves on conservation policies and ecosystems and why they are important. I'm still learning every day."

#### Her Education

- Bachelor's degree, North Central College, Naperville, IL: biology
- Master's degree, Arkansas State University, Jonesboro, AR: wildlife ecology



# In Brief

News and updates from MDC



Three-toed box turtle



Monarch butterfly



## MDC IS GOING TO THE FAIR

DISCOVER NATURE AT THE MISSOURI STATE FAIR AUG. 10-20

➔ MDC will be at the Missouri State Fair in Sedalia, giving you a chance to discover nature in the heart of the fairgrounds!

Visit the Conservation Building from 9 a.m. to 7 p.m. each day of the fair to see live fish and other native animals such as snakes, turtles, and amphibians. Learn about and see displays of native plants that help butterflies and other important pollinators. Ask MDC staff conservation-related questions, get educational materials, and have fun.

Join us Friday, Aug. 11, for Missouri Department of Conservation Day — a full day of fun and excitement sponsored by MDC! For more information, visit [mostatefair.com](https://mostatefair.com).

# Ask MDC

## Got a Question for Ask MDC?

Send it to [AskMDC@mdc.mo.gov](mailto:AskMDC@mdc.mo.gov)  
or call 573-522-4115, ext. 3848.

### Q: Several large red oak trees on my property are dying. Would the drought cause this?

➔ The drought could be a reason for your trees dying — but it also may have been the final blow that stressed the trees enough to die.

Most of the Missouri Ozarks was clearcut during the late 1800s to early 1900s. Today, many older trees in the red oak group are approximately 80- to 150-years-old. At these advanced ages, they are considered elderly. And, just like us, as trees age they become susceptible to multiple stressors such as drought, excessive rain, fungal attack, and insect infestation.

Conservationists recommend watering established trees two to three times per month during dry periods with 10 gallons of water per diameter-inch of a tree's trunk, measured at 4.5 feet above the ground. To determine the total watering time needed using a hose set at medium pressure (2 gallons

per minute), multiply the tree's diameter in inches by 5 minutes.

Try to water as much of the root zone as possible and provide water gradually to promote infiltration. For trees less than 3 years old, consider watering them every seven to 10 days.

Be careful when watering evergreens in heavy clay soil as it is easy to damage their sensitive roots with too much water. Consider applying a 3-inch layer of shredded bark mulch around a tree's root zone to help moderate soil temperatures and moisture levels.

For more information about tree care, visit [short.mdc.mo.gov/4Wi](https://short.mdc.mo.gov/4Wi).

### Q: I found this strange plant while hiking in Don Robinson State Park. What is it?

➔ This is Indian pipe, a perennial wildflower that lacks chlorophyll and is therefore white or sometimes pinkish. Instead of using the photosynthesis processes typical for

green plants, this species relies on a vast network of roots and associated mycorrhizal fungi to obtain nutrients from the roots of surrounding living plants. Indian pipe functions as an "epiparasite," or a parasite that uses other parasites. It is sometimes misidentified as a mushroom.

Indian pipe usually grows in small clusters. The flowers arise singly on a white, scaly stem and are urn-shaped, nodding, with four or five petals and no sepals. The flowers are white, turning purple and later black. As the seeds ripen, the downturned flower gradually turns upright. It can be seen blooming from August through October.

Learn more about this fascinating plant at [short.mdc.mo.gov/4W3](https://short.mdc.mo.gov/4W3).



Indian pipe

## NEW HUNTING BOOKS AVAILABLE

Missouri deer, turkey, waterfowl, and dove hunters can get the most current information on upcoming fall hunting from MDC's new *2023 Fall Deer & Turkey Hunting Regulations and Information* booklet and *Migratory Bird and Waterfowl Hunting Digest 2023-2024*.

The *2023 Fall Deer & Turkey Hunting Regulations and Information* booklet has detailed information on fall deer and turkey hunting seasons, limits, permits, managed hunts, regulations, conservation areas to hunt, post-harvest instructions, chronic wasting disease updates, and more. The booklet is available where permits are sold and online at [mdc.mo.gov](https://mdc.mo.gov).



The *Migratory Bird and Waterfowl Hunting Digest 2023-2024* has detailed information on waterfowl hunting along with hunting doves and several other migratory game birds, such as rail, snipe, and woodcock. It also has information on needed permits and duck stamp requirements, hunting seasons and limits, hunting areas, regulations, and more. The digest is available where permits are sold and online at [short.mdc.mo.gov/Zjw](https://short.mdc.mo.gov/Zjw).

Buy Missouri hunting and fishing permits from vendors around the state, online at [mdc.mo.gov/permits](https://mdc.mo.gov/permits), or through MDC's free mobile app, MO Hunting, available for download through Google Play or the App Store.





Northern rough greensnake

**Q: I found a bright blue snake that was dead. What species was it?**

➔ It's likely a northern rough greensnake. Upon death, these green-colored snakes lose the yellow pigmentation within their skin and turn a blue color within several hours. This is a normal decaying process for this species.

Northern rough greensnakes are active by day and live in bushes, vines, and low-hanging branches of trees near streams or lakes. They often are overlooked because they blend so well into their leafy surroundings. The beautiful green color helps these slender, mild-mannered insectivores blend in with the trees where they live.

Greensnakes are active April through October. They can be spotted crossing roads, trails, and creeks.

They are sometimes confused with smooth greensnakes, a species considered extirpated (eradicated) from Missouri. One of the primary differences between the two is that the rough greensnake has raised keels on its back, giving it a rough texture; the smooth greensnake feels smooth. Also, smooth greensnakes are 14-20 inches in length. Rough greensnakes are 22-32 inches.

For more information about rough greensnakes, visit [short.mdc.mo.gov/4WU](http://short.mdc.mo.gov/4WU). For more information about smooth greensnakes, visit [short.mdc.mo.gov/4Ww](http://short.mdc.mo.gov/4Ww).



## Lieutenant Lucas McClamroch

CHARITON, LINN, CARROLL,  
LIVINGSTON, GRUNDY, AND  
MERCER COUNTIES

*offers this month's*

# AGENT ADVICE

August is the threshold of hunting season. The coming months have something for just about every hunter — from waterfowl to deer and turkey to dove and small game. Take this month to prepare by siting in your firearm and bow. Visit one of the state's five staffed shooting ranges or 70 unstaffed shooting ranges. Regardless of your experience or skill level, you can become a sharper, safer hunter at one of MDC's ranges. Plan ahead before you go. Staffed ranges are open during certain times while unstaffed ranges are first come, first served. Always be courteous to other patrons and remember, safety is key. For more information about Missouri's ranges, visit [short.mdc.mo.gov/Z9W](http://short.mdc.mo.gov/Z9W).

## What IS it?

Can you  
guess this  
month's  
natural  
wonder?

*The answer is on  
Page 9.*





## VENISON SHEPHERD'S PIE

We've taken a British favorite, usually made with beef or lamb, and put a Missouri spin on it! Shepherd's pie adapts well to wild-harvested, tasty, lean venison. Top with sweet potatoes for a sweeter twist than the traditional white-potato topping.

Serves 6

### TOPPING

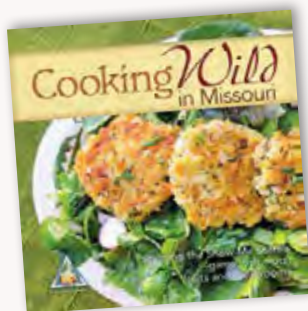
- 2½ pounds sweet potatoes, peeled, cut into 2-inch pieces
- 1 medium russet potato, peeled, cut into 2-inch pieces
- 2 tablespoons butter
- 2 tablespoons pure maple syrup

### SPICE BLEND

- ¼ teaspoon whole coriander
- ¼ teaspoon whole cumin
- ¼ teaspoon whole fenugreek
- ¼ teaspoon cardamom seeds
- ¼ teaspoon whole mustard seeds
- ¼ teaspoon whole fennel seeds
- ¼ teaspoon whole cloves
- 1½ teaspoons cayenne pepper
- 1 teaspoon turmeric
- ½ teaspoon cinnamon
- 1 teaspoon salt

### MEAT MIXTURE

- 1½ pounds ground venison
- 2 cups chopped onions
- 5 large garlic cloves, minced
- 3 tablespoons extra-virgin olive oil
- ¾ cup frozen peas
- ¾ cup frozen corn kernels
- ½ cup half and half or cream
- 1 egg, lightly beaten



This recipe is from *Cooking Wild in Missouri* by Bernadette Dryden, available for \$16 at most MDC nature centers and online at [mdcnatureshop.com](http://mdcnatureshop.com).



**STEAM** potatoes in double broiler until tender, about 25 minutes. Drain water from bottom pan and pour in potatoes. Add butter and syrup. Season to taste with salt and pepper. Mash mixture until smooth.

**GRIND** whole spices in an electric grinder or mortar and pestle, then mix with cayenne pepper, turmeric, cinnamon, and salt. In a large bowl, mix venison with spice blend, onions, and garlic.

**PREHEAT** oven to 350 degrees. Butter 9- by 12-inch glass or ceramic baking dish. Heat olive oil in a large sauté pan and cook meat mixture until brown and cooked through, turning and breaking up large pieces. Season to taste with salt and pepper. Add more cayenne if you desire a hotter taste. Let meat mixture cool, then mix in peas, corn, half and half, and egg.

**TRANSFER** meat mixture to the prepared baking dish. Spoon a smooth layer of mashed potatoes over the top. Bake until heated through and potatoes begin to brown around edges, about 45 minutes. Place under the broiler for a couple of minutes to brown top. Let stand 5 minutes before serving.

**NOTE:** This dish can be prepared a day ahead, then covered and refrigerated for later use. You'll need to increase the baking time by about 15 minutes if you put it into the oven cold.



## LONNIE HANSEN NAMED MASTER CONSERVATIONIST

MDC and the Missouri Conservation Commission honored retired MDC Wildlife Biologist Lonnie Hansen of Columbia with the Master Conservationist Award. Hansen is the 67th person to receive the award. Hansen began his career with MDC in 1987 as a wildlife biologist, a position he held until his retirement more than 30 years later in January 2015.

During his time with MDC, Hansen focused primarily on deer management. Early in his career, he designed and implemented large-scale deer research projects to collect reproductive and survival data. This information allowed MDC to set more meaningful harvest quotas and better manage the state's deer population. He also led MDC's efforts to better engage and measure public opinion on deer management and related regulations. He initiated the design and implementation of MDC's electronic system to sell permits and collect harvest data and hunter demographic data, called Telecheck.

Hansen also led efforts to help landowners whose crops suffered deer damage with a simplified process to obtain special permits and reduce their specific problems.

Hansen also guided MDC when chronic wasting disease (CWD) became a national concern in the early 1990s. CWD is a fatal disease that infects deer and members of the deer family, called cervids.

Hansen also initially proposed, designed, and fostered a program to reintroduce once-native elk into the Ozark region of Missouri. The result of his efforts is a growing herd of free-ranging elk in select areas of the Missouri Ozarks in and around Peck Ranch and Current River conservation areas. The elk restoration effort has resulted in countless elk-viewing opportunities by the public and an annual elk hunting season.

## LEE REDMOND JOINS CONSERVATION HALL OF FAME

MDC and the Missouri Conservation Commission posthumously honored retired MDC Assistant Fisheries Division Chief Lee Redmond by inducting him into the Missouri Conservation Hall of Fame. Redmond, formerly of Lohman, died Sept. 20, 2022, at age 83. Redmond is the 47th inductee into the Missouri Conservation Hall of Fame.

Redmond joined MDC in 1963 as a fisheries research biologist. He then became a fisheries management supervisor and assistant fisheries division chief before his retirement in 2000 after 37 years. While at MDC, he implemented fish size limits for lakes throughout the state and was instrumental in establishing MDC's urban fishing program, one of the first in the nation. Redmond also drafted MDC's original Municipal Lakes Program, which later became the Community Assistance Program.

Redmond also garnered federal funds for MDC for sportfishing. Those funds helped establish the first nationally recognized stream management program, Streams for the Future. He also led research on fisheries management techniques, authored many nationally recognized scientific papers on the topic, and gave numerous presentations.

He was regarded as an expert in fisheries management and was a leader in the American Fisheries Society (AFS) where he served in several capacities, including as president from 1994-1995. He was very active in the state, national, and international AFS and was honored by the AFS with numerous awards. He was a charter member of the AFS Missouri Chapter, which created the Lee Redmond Citizen's Award in his honor for persons who make substantial contributions to Missouri's aquatic resources. He was elected to the Fisheries Management Hall of Excellence in 2001.



## WHAT IS IT?

### IO MOTH CATERPILLAR

Mature io moth caterpillars are yellowish green to bluish green with a red-and-white stripe on the sides. They are thickly covered with bristly, stinging spines that cause severe irritation in some people. When young, caterpillars are orange and stay in groups, sometimes "marching" in a single file line. They become more solitary as they mature. The caterpillars are herbivores that graze on vegetation. Although the caterpillars have stinging spines for defense, some predators probably are immune to them, feeding on them anyway.



io moth



A photograph of a wooded area with a hunting blind and a camera on a tripod. The scene is set in a forest with bare trees and some green foliage. A hunting blind, covered in a dark tarp, is positioned on the right side of the image. In the foreground, a camera is mounted on a tripod, facing towards the blind. The ground is covered with dry leaves and grass.

# Seniors *Afield*

NURSING HOME RESIDENTS GET  
ANOTHER SHOT AT DEER HUNTING

by Brent Frazee | photographs by David Stonner

Bessie Hume isn't  
your ordinary  
rookie deer hunter.

When you're 93 and you live in a nursing home, people take notice when you say you want to go deer hunting for the first time.

Maybe that's why Bessie was treated like Queen for a Day when she joined four other senior citizens for a special hunt last fall arranged by Baptist Homes and Health Care Ministries and the National Deer Association.





Never too old. That could be 93-year-old Bessie Hume's motto as she went deer hunting for the first time.



The goal of the organizers was to provide nursing home residents with one of those “you’re-never-too-old” experiences in the Missouri Ozarks.

Some had been deer hunters in an earlier life, but thought they were too old to get back in the woods now. Others, like Bessie, had never tried it but were open to it.

“I was eating lunch one day and Pam (Workman, administrator of the Ozark home where Bessie lives) came up to me and said, ‘Bessie, I’d like to see you for a minute.’ I thought, oh, no, what have I done?” Bessie recalled.



“She’s now known as Bull’s-eye Bessie,” Workman said.



“But she handed me this paper with information about the deer hunt and asked me if I would like to give it a try. At first, I didn’t know if I could do it — if I could hold up for the day. But then, I thought, why not?”

Others took a similar leap of faith when recruited for the special deer hunt. The deer season is often a topic of conversation in the nursing home once fall arrives. But this was a chance to get back into the game in a highly supervised situation.

“We wanted this to be a cross-generational experience,” said Dr. Rodney Harrison, president and CEO of Baptist Homes and Healthcare Ministries, who came up with the idea.

“Not only did we reactivate some hunters, but we also gave them a chance to interact with their younger mentors — to tell stories about their younger days. Deer hunting is a big deal in the Ozarks, and we wanted to give them a chance to be a part of it again.”

### Bessie’s Story

The deer hunt wasn’t totally out of Bessie’s realm of comfort. She still has wonderful memories of the days she and her dad would go squirrel hunting in the Ozarks.

She loved being in the outdoors, and she took pride in helping put food on the table.

“I hunted with a .22 and I got pretty good at it,” she said with pride.

But deer hunting? With a crossbow? A weapon she never knew existed before the hunt?

“I almost got cold feet,” she said.

But that changed after the hunters took target practice and Bessie consistently hit the mark.

“She’s now known as Bull’s-eye Bessie,” Workman said.

Bessie and her mentor were transported to a nearby farm where a landowner had granted access for the day. They settled into a well-camouflaged ground blind and Bessie could feel the magic of the woods revitalize her.

They sat quietly and watched for deer. And they saw several in the distance. But none were close enough for Bessie to get a shot.

That was only a slight disappointment for the 93-year-old widow, who once lived in Branson with her husband. She was back in the game.

Workman told her, “You need a t-shirt that says, ‘Officially a deer hunter.’”

Bessie giggled.

“Everyone treated me like a queen. I couldn’t have asked for a better day.”

Rodney Harrison assists as “Bull’s-eye” Bessie takes aim with a crossbow at a 3-D deer target. She makes a clean kill shot to the heart.





## Origins of the Hunt

That's what Harrison imagined when he came up with the idea for the hunt.

It was a way to restore dignity for the senior citizens living in the Baptist Homes care facilities. They often felt forgotten and alone in their daily lives.

This was a way to provide hope in a controlled setting. And he knew the mentors — members of the National Deer Association and other experienced hunters — would get just as much out of the hunts as the seniors would.

He knew that through personal experience. He remembers deer hunting with his dad during his teenage years when they lived in California. It was a much-anticipated experience for a boy who grew up reading *Outdoor Life* and *Sports Afield*, but the deer failed to show up for the hunt.

Many years later, after Harrison's parents moved to Missouri and Harrison and his family relocated there, too, Harrison invited his dad to another father-son deer hunt.

Harrison's father shot his first deer, an 8-point buck, and the emotions flowed.

"To see the emotion, the joy, on his face really touched me," Harrison said. "He talked about it constantly. Pretty soon, I was hearing from people in our church and our pastor. 'Hey, I heard your dad took a nice buck.' I thought, wouldn't it be great to replicate that for the residents in our homes?"

Baptist Homes and Healthcare Ministries oversees nine nursing homes or senior-care facilities throughout Missouri.

But Harrison wanted to start slowly in getting the hunts implemented.

The first took place Sept. 15, the first day of Missouri's archery deer season, at the Baptist Home of Arcadia Valley campus in Ironton.

Five senior citizens signed up for the crossbow hunt, but unseasonably warm weather affected deer movement, and no one was able to shoot a deer.

The second crossbow hunt took place in late October near the Ozark Baptist Home, also resulting in no deer being taken.

But to most of the participants, that mattered little. They at least could call themselves deer hunters.

"We heard a lot of touching stories," said Cheyne Matzenbacher, a deer outreach specialist for the National Deer Association, who helped plan the hunts. "We had one guy who had a stroke and was in a wheelchair. We made sure he had an extra-large blind for him and his wife to sit in."

"A man that I mentored at the Ozark hunt had a couple shoulder, knee, and

**Bessie Hume and her mentor, Rodney Harrison, shared a laugh as they settled into a blind during a deer hunt for nursing home residents.**





Bessie Hume was back in school when she joined other nursing home residents for a special hunt last fall. Her course of study: Missouri deer hunting. She received help with her aim while shooting a crossbow, then listened to mentors talk about deer behavior, hunting regulations, strategy, safety, and other aspects of the hunt.

hip replacements. He told us he was just falling apart. But he loved to deer hunt, and he didn't think he would ever be able to do it again. He was so grateful just to get out."

## A Crash Course on Deer Hunting

The hunts were highly structured. Labeled as a Field to Fork program, they covered all aspects of the hunt.

During an education session, representatives with the National Deer Association and the Missouri Department of Conservation talked about how hunting fits into conservation, deer biology, hunting etiquette, and shot placement. Licenses were also checked.

A venison lunch was served, then the hunters had a supervised practice session at the range with their crossbows and listened to talks about safety.

After a break, hunters and their mentors were transported to their blinds.

"We wanted to make the blinds accessible," Matzenbacher said. "A lot of our hunters used canes or walkers to get around, so we had to make sure they could get there without much difficulty."





Jim Carty, environmental services director, Baptist Homes, Arcadia Valley (left) and participant David Hicks (right) settle in for a hunt.

## Promoting Deer Hunting

The National Deer Association is devoted to the three R's — recruiting, retaining, and reactivating deer hunters.

It met all three when it helped with the Baptist Homes deer hunts.

Fred Davis, 91, who lives in the Arcadia Valley nursing home, was one of the participants who was reactivated.

A longtime pastor, he began deer hunting when one of the members of his church invited him to hunt on his farm. That began a long friendship and hunting tradition.

"I hunted on that fella's farm for 30 years," Davis said. "He had so many deer on his places, his crops were just getting eaten up. He wanted us to take does so that he could thin down the deer numbers. And we were happy to oblige."

Eventually, the years caught up with Davis and he quit deer hunting. But when this opportunity came along, he was eager to participate.

"I thought my deer hunting days were over," he said. "But this gave me a chance."

Davis and his mentor didn't see deer. But Davis, who previously lived in Batesville, Ark., did get to shoot a crossbow for the first time, and he was proud of the results.

"I shot at the target four times, and I hit the bull's-eye every time," he said. "I wish I could have run into one of the deer I see all the time on my walks. I'll see as many as five or six deer some days."

Nonetheless, Davis said it was great to be a deer hunter again. And others who participated felt the same way.

"We heard from seniors who called their family and said, 'You'll never believe what I did today. I went deer hunting,'"



Senior citizens learned to shoot a crossbow before a deer hunt last fall.

Harrison said. "We are thrilled with the way things went. We're already planning future hunts. We hope to turn this into a tradition." ▲

*Brent Frazee was the outdoors editor for The Kansas City Star for 36 years before retiring in 2016. He continues to freelance for magazines, newspapers, and websites.*









# Slowing the Spread

PERSISTENCE KEEPS  
CHRONIC WASTING DISEASE  
PREVALENCE LOW

by Bill Graham

**T**he battle to protect Missouri's deer and elk herds from fatal and infectious chronic wasting disease (CWD) is ongoing, but deer biologists and wildlife health professionals are optimistic. The state's deer population remains healthy thanks to a mix of science-based management and enormous in-the-field efforts by MDC staff, partners, hunters, and landowners. Although CWD cases were found in several new locations during the past hunting seasons, persistence in using science-based surveillance and management tools is paying a key dividend. Prevalence of the disease, the percentage of the deer population infected with CWD, remains low.

"Despite CWD being detected more than a decade ago in Missouri, this past season, only a quarter of one percent of hunter-harvested deer that were sampled tested positive," said Deborah Hudman, MDC wildlife health program supervisor. "That is a testament to our extensive CWD surveillance program, which is designed to detect the disease as early as possible in new areas, and our on-the-ground management efforts designed to slow its spread."

Partnerships are key. From July 2022 to April 2023, MDC tested more than 33,000 deer and only found 118 positive CWD cases. Most of these were hunter harvested, brought by hunters to mandatory sampling stations in the CWD Management Zone during the opening weekend of the regular firearms season, or to voluntary sampling spots such as freezer drop-offs for deer heads. Some CWD positives were from samples submitted by partnering taxidermists and meat processors, while others were from deer removed by MDC staff or landowners during winter targeted culling operations in hotspot areas within 2 miles of where positives have been found. In fact, 41 of the 118 CWD-positive deer this past year were removed during targeted culling. Knowing where the disease is present and using the established hunting season and localized management, like targeted culling, is removing CWD-positive deer from the landscape and reducing deer herd size in localized areas to slow the spread of the disease.

Healthy deer are important to Missouri's ecology, economy, and family hunting traditions.

PHOTOGRAPH BY  
NOPPADOL PAOTHONG



## The Good Numbers

“Although CWD has been detected in over 30 Missouri counties, the percentage of deer infected with the disease remains low in areas where it exists,” said Jason Isabelle, MDC cervid program supervisor. “This is a good thing because it means that the disease has not gained a strong foothold in these areas. Although it isn’t likely that CWD can be eliminated from most of the areas in Missouri where it has been found, the low infection rates indicate that the spread of CWD can be slowed significantly by continuing to conduct localized management in these areas.”

CWD is always fatal to cervids, such as deer and elk. The disease damages nervous system tissue, including the brain. In early stages, infected animals do not show symptoms but can transmit the disease. CWD is caused and transmitted by infectious prions, misshaped cellular proteins. The disease can be transmitted by direct animal to animal contact, and prions — shed by deer in saliva, urine, or feces — can persist in the environment and infect deer. MDC restricts the transportation of hunter-harvested deer carcasses from CWD Management Zone counties, and from other states, because that is one way the disease can be moved to new areas.

There has been no reported cases of CWD infection in people. But the Centers for Disease Control and Prevention recommends that as a precaution, hunters not consume venison from animals that test positive for CWD.

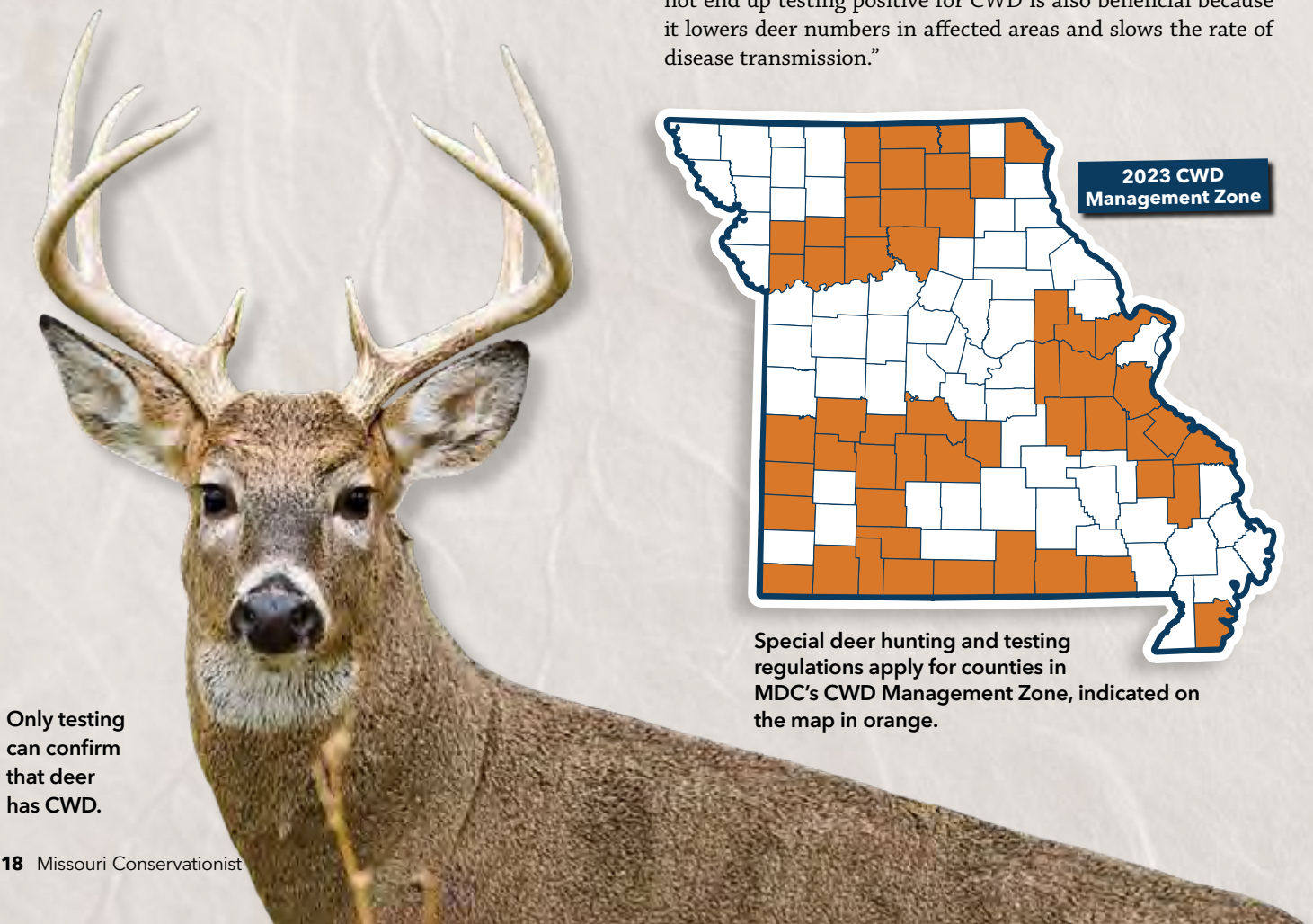
## Science at Work

Science is working toward better testing methods to detect the disease. Currently, lymph nodes are taken from dead deer for testing. But MDC staff and researchers at the University of Missouri-Columbia are conducting research for more efficient methods. That’s part of other national research projects on CWD and worldwide research on the category of diseases known as transmissible spongiform encephalopathies, of which CWD is one. Hudman and Isabelle attended an international symposium in May with the theme, “Overcoming Barriers to Control CWD.”

“Through a partnership with the University of Missouri, our staff is engaged in a research project to develop a new CWD testing platform able to detect small amounts of CWD prions in blood,” Hudman said. “Detecting CWD through blood would allow us to test live animals. This would provide a useful tool for disease management in farmed cervid populations.”

But for now, sampling lymph nodes for the disease is continuing to allow MDC to detect CWD early where it exists. Additionally, using targeted culling close to where CWD has been detected is proving to be effective in slowing the spread of the disease and keeping infection rates low. Targeted culling is a proven method to slow the spread of CWD and is used by several states to manage the disease. Culling deer is only done on private property when landowners give permission.

“Removing CWD-positive deer during targeted culling eliminates the ability of these animals to interact with other deer and spread the disease,” Isabelle said. “Removing deer that do not end up testing positive for CWD is also beneficial because it lowers deer numbers in affected areas and slows the rate of disease transmission.”



Only testing can confirm that deer has CWD.

Special deer hunting and testing regulations apply for counties in MDC's CWD Management Zone, indicated on the map in orange.



## How Hunters Can Help

Hunters can help by harvesting deer, participating in CWD testing programs, and following regulations designed to slow the spread of CWD. The Missouri Conservation Commission approved regulation changes for the 2023–2024 deer hunting season that are designed to help stabilize Missouri’s growing deer population. Additional hunting opportunities will also be provided in CWD Management Zone counties to increase deer harvest to slow the rate of CWD spread. MDC has also expanded the CWD Management Zone to account for detections in new counties last year.

“All counties in which CWD has been detected and those within 10 miles of a CWD-positive detection are included in the CWD Management Zone,” Isabelle said. “In CWD Management Zone counties, there are several regulation changes that are implemented to slow the spread of CWD and minimize the chances of the disease being introduced to new areas.”

They include:

- Feeding deer is prohibited (with some exceptions) to minimize chances of CWD spread through direct deer-to-deer contact and contact with infectious CWD prions shed by deer at feeding sites.
- Deer carcass transportation restrictions are implemented to minimize the chances of deer being transported improperly and spreading CWD to new areas.
- MDC also rescinds the antler-point restriction (APR) in CWD Management Zone counties to allow harvest of young antlered male deer, which are the most likely to disperse from the area in which they were born and therefore the most likely to spread CWD.
- Mandatory sampling also occurs annually in select CWD Management Zone counties to help MDC find new areas of CWD infection as soon as possible so that management can be implemented to slow the disease spread.

## Flexible Management

Some regulation changes for the 2023–2024 deer hunting season also reflect MDC biologists’ desire to increase deer harvest in some counties to help keep the state’s deer herd in a sustainable balance. Surveys of stakeholders, such as hunters and agricultural producers, are used annually to help maintain deer



The cooperation from hunters and other partners is crucial to MDC efforts to slow the spread of CWD.

numbers at socially acceptable levels. The goal of MDC’s deer program is to use science-based wildlife management to maintain a biologically and socially balanced deer population that provides recreational opportunity, minimizes deer conflicts with people, and maintains ecosystem health.

“Stakeholder input is critically important to managing Missouri’s deer population,” Isabelle said. “In most counties, based on stakeholder input, deer numbers exist at desirable levels. However, deer numbers are also increasing in most counties.”

Isabelle noted that if efforts are not taken to increase antlerless deer harvest to stabilize the growing population, deer numbers could soon exceed desired levels. Increasing deer harvest in CWD Management Zone counties is also beneficial from a disease management standpoint.

“We know that higher deer numbers can increase the rate at which CWD spreads,” he said. “Increasing deer harvest in the CWD Management Zone will help to minimize the effects of the disease on the state’s deer population.”

Some of the changes:

- In 100 of Missouri’s 114 counties, there will be a new early antlerless portion of firearms deer season Oct. 6–8.
- For counties in the CWD Management Zone, there will be a new CWD portion of firearms deer season Nov. 22–26. Hunters will be able to use any unfilled firearms deer hunting permits. They must abide by the statewide limit of one antlered deer during firearms deer season and by county-specific firearms antlerless permit numbers.
- MDC has increased the number of firearms antlerless permits that a hunter can fill from two to four in 85 counties. Also new, hunters will be able to fill one firearms antlerless permit in Butler, Carter, Scott, and Wayne counties.
- Qualifying resident landowners may each receive two resident landowner firearms antlerless deer hunting permits in Reynolds County.



## Deer Hunting Seasons Ahead

Missouri has a healthy deer herd, and a variety of hunting opportunities await in the seasons ahead. Hunting starts with an archery season opening Sept. 15, which closes during the November portion of firearms deer season, then resumes until Jan. 15. In between those dates are antlerless portions, special youth and CWD portions, and an alternative methods portion.

For a complete overview, visit [short.mdc.mo.gov/Zjw](https://short.mdc.mo.gov/Zjw) for the 2023 Fall Deer & Turkey Hunting Regulations and Information booklet. This booklet is also available in printed form at MDC public offices and in retail stores where hunting permits are sold. The booklet has complete information on seasons and regulations. Also, the booklet has comprehensive information pertaining to the CWD Management Zone, mandatory sampling in portions of the zone during opening weekend, and special regulations to limit CWD spread.

To learn more about white-tailed deer in Missouri, visit [short.mdc.mo.gov/ZvC](https://short.mdc.mo.gov/ZvC).



## A Precious Resource

Deer hunting contributes more than \$1 billion annually to Missouri's economy. It's also a source for healthy food and health-boosting outdoor recreation for Missourians. Deer hunting is a beloved bonding tradition for families and friends. Deer are also among the state's most popular watchable wildlife for people who enjoy nature and healthy ecosystems.

To take no action to manage CWD would put the state's deer population at great risk. In other states that have been unable to take aggressive action to monitor and manage the disease, infection rates are far higher. In the long run, if left unchecked, CWD can drastically reduce both quality and quantity of the state's deer herd. If CWD infection rates increase dramatically, hunters would see less deer and fewer older deer.

"By continuing to test deer, monitoring spread of the disease, and applying management like targeted culling, we are doing all that we can to slow the spread of CWD and minimize its impacts on Missouri's deer population," Isabelle said.

Continued help from hunters, landowners, taxidermists, and deer processors is critical to success. Their help makes it possible for the extensive annual investments MDC is making in staff work hours, equipment, and testing to be successful in limiting the disease.

"Even in areas where we've had the disease the longest, the percentage of the deer population that is infected remains low," Isabelle said. "Although this is good news, it is not justification for a passive approach to management, quite the opposite. Now is the time to act and to act aggressively. We cannot wait for the disease to become more widely established or for a higher percentage of the deer population to become infected before we attempt aggressive management. By then, it will be too late. We must sustain the efforts that we've employed thus far. The stakes are too high to do anything else." ▲

*Bill Graham is MDC's media specialist for the Kansas City and Northwest regions. He's a lifelong hunter, angler, and camper. He also enjoys hiking and photographing Missouri's best wild places.*





# Resting in Peace with Nature

THREE ICONIC CEMETERIES OFFER OASES FOR WILDLIFE AND PEOPLE IN THE URBAN CORE OF ST. LOUIS

by Dan Zarlenga | photographs by David Stonner

**B**efore there were parks, greenways, and conservation areas, there were cemeteries. It was in these places that the public could find the quiet touch of nature in a time when there were no taxes or other means to fund the community green spaces we now take for granted.

Cemeteries provided a respite of grass and trees, birdsong, rolling terrain, peace and quiet. People of the past came to connect with the land, for contemplation, for walks, even picnics. Cemeteries existed as much to enrich those alive as places to rest the dead.

Today, three landmark cemeteries located in the heart of

urban St. Louis — Calvary, Bellefontaine, and Greenwood — still provide that special touchpoint with nature.

Many have reunited with the land on these three grounds: founders, explorers, paupers, poets. Some fought battles with bullets. Others battled for ballots. Still others for their own freedom. The well-known, the unknown. Stories they engraved on history resonate far beyond the stones.

But these burial places also protect and provide crucial acres of urban forest and green space for birds, insect pollinators, wildlife, and even for St. Louisans themselves. To strengthen and enhance these essentials for people and nature, MDC has formed partnerships with each of these historic cemeteries.



“Out here on the beautiful prairies, the scene is delightfully grand, for signs of the richest fertility cover the face of the land.”

— Rev. Thomas Ambrose Butler, priest and poet, at rest in Calvary Cemetery

## Calvary Cemetery

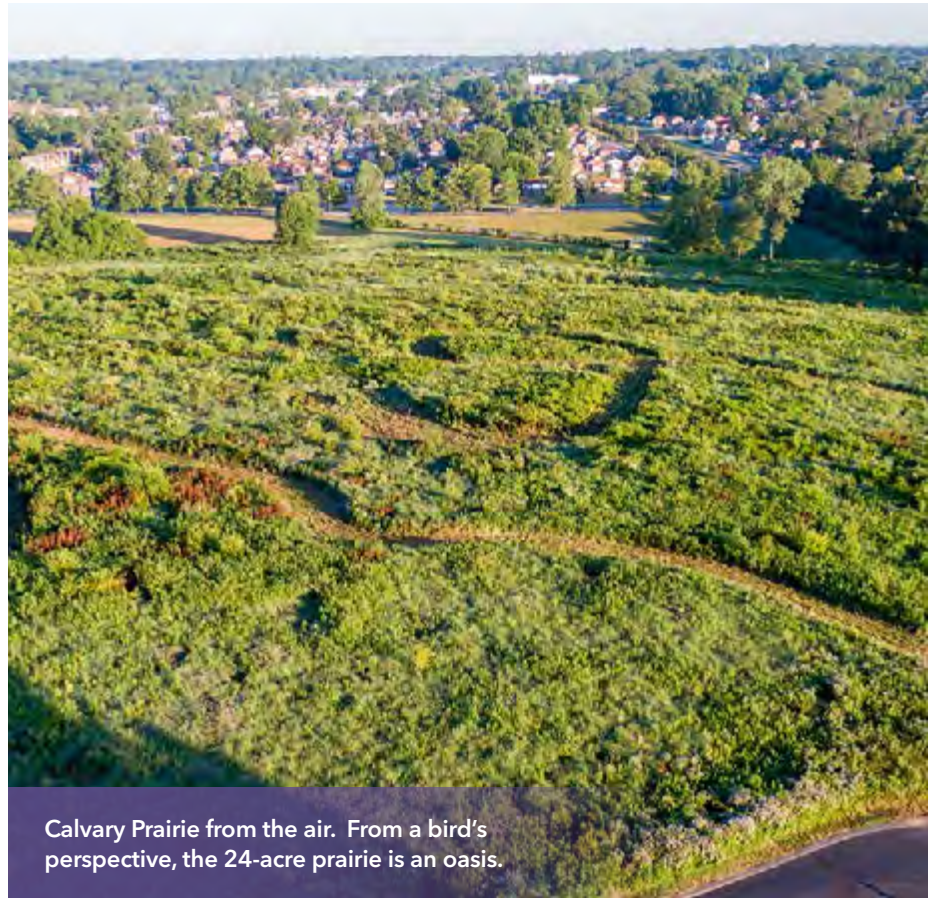
Buried beneath the soils of Calvary, long before any European set foot here, were the roots of prairie. Vast stretches of it nurtured a dynamic ecosystem of warm-season grasses and robust forbs. Prairie covered most of where St. Louis now stands. It was erased by three centuries of human settlement and city building.

Today, a cooperative partnership has resurrected 24 acres of this original native grassland in a secluded, north-west portion of the cemetery.

Calvary Cemetery and Mausoleum, first opened in 1854, is in the north part of St. Louis City and lies along West Florissant Avenue. The 470-acre tract is owned and managed by the Catholic Archdiocese of St. Louis. Since it remained protected from the plow, the deep-reaching roots of prairie flora were never disturbed. Inherited in them is the ecological story of St. Louis' original landscape.

“The lack of disturbance from row cropping probably explains these healthy, intact soils,” said Erin Shank, urban wildlife biologist for MDC's St. Louis Region. She is responsible for managing this space and for arranging MDC's cooperative agreements with all three cemeteries. The agreement between MDC and the archdiocese allows MDC to manage the prairie with archdiocese support.

Shank explained that the first stage of a 10-year restoration plan started in 2012, with five years of intense invasive species removal. The next step was to give the prairie an assist by reseeding it with grasses and forbs from other prairie ecosystems in Missouri. These included prairies that were themselves originally sowed with seed harvested



Calvary Prairie from the air. From a bird's perspective, the 24-acre prairie is an oasis.

from Calvary. As part of the ongoing management plan, MDC has also performed prescribed burns, which help clear unwanted debris and invasives, recycle nutrients, and stimulate native plant growth.

Tom Kuehner is the director of grounds and facilities for the 17 Catholic cemeteries in the St. Louis Archdiocese. He's noticed a profound transformation in the last decade.

“It's a big change in the landscape,” Kuehner said. “The prairie has added so much beauty to the cemetery. It established a lot of wildlife we didn't have before. Now there are just hundreds of turkeys, which leads to more coyotes, and foxes, and an occasional deer.”

Kuehner notes that he and his staff have also witnessed yellow finches, bluebirds, red-tailed hawks, bald eagles, owls, skunks, and flying squirrels. Calvary prairie supports a diverse array of colorful flowers, too, which change composition through the seasons. Big bluestem towers among the forbs,

alongside other native grasses like Indian grass and switchgrass.

But it is the amazing diversity of bees that captivates Shank.

“Out of the 450 or so species of native bees that we have in Missouri, we have found over 100 of them at Calvary just in that 24-acre section,” she said. Most of these bees are ground-nesting species, and the intact, undisturbed prairie soils — enriched by the extensive lattice of plant roots — provide ideal habitat for them. In turn, the bees are crucial pollinators for the plants.

“It is incredible to experience this prairie in a densely populated area where we don't have a lot of other natural green spaces,” Shank said.

“Everything outside is asphalt and concrete, and here's a little oasis,” Kuehner observed. “It's a welcome thing.”

Purple coneflowers of spring, coreopsis in summer sun, autumn's goldenrod glow. Out on Calvary Prairie, a part of St. Louis is reborn, and the scene is delightfully grand.



MDC uses prescribed fire to help manage the prairie at Calvary Cemetery.

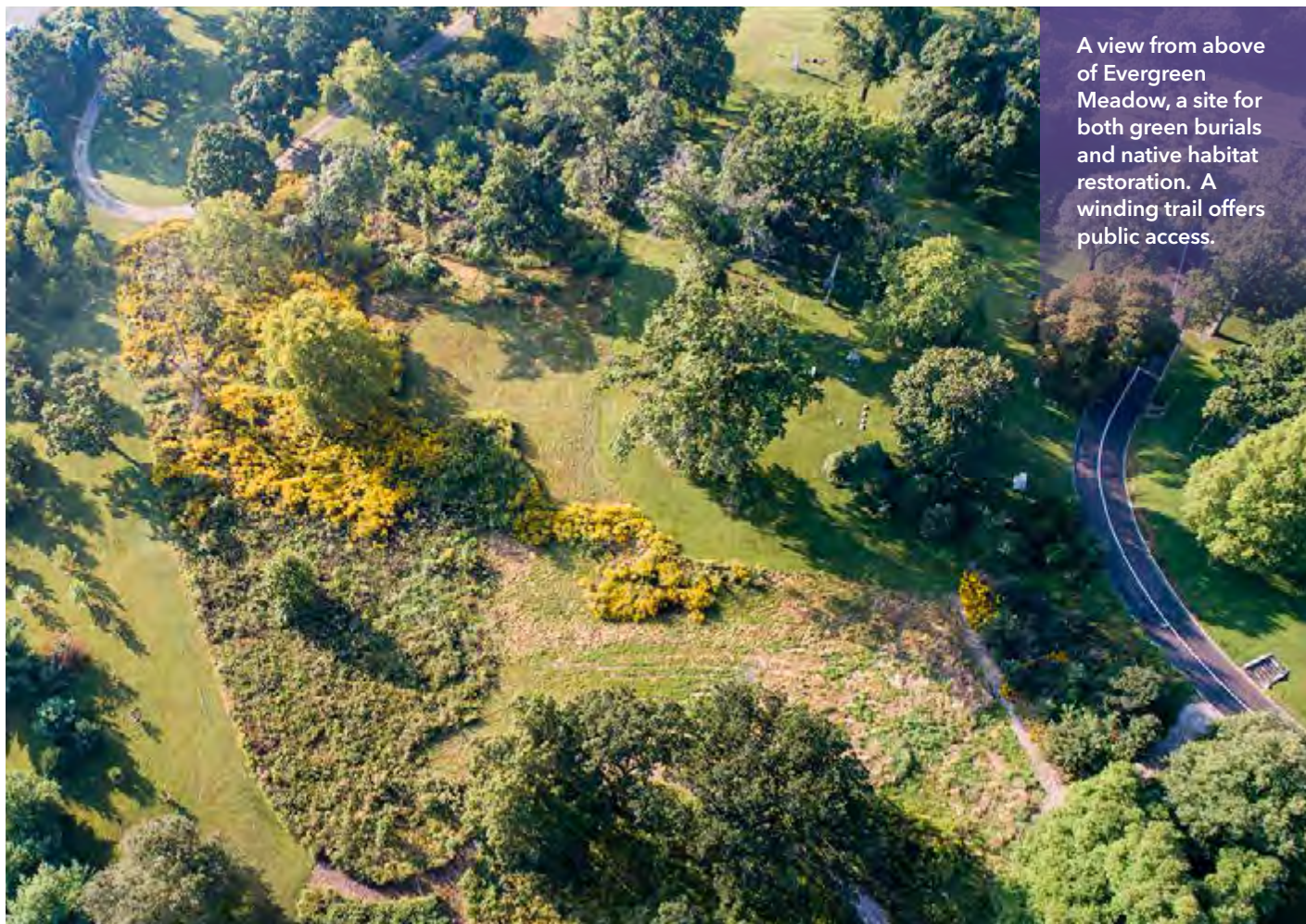


A bumblebee lands on wild bergamot. Native forbs in the prairie provide beauty for people and support for important pollinators.

Calvary Cemetery and its prairie are crucial habitat for native wildlife, like this flock of turkeys roaming through the headstones.







A view from above of Evergreen Meadow, a site for both green burials and native habitat restoration. A winding trail offers public access.

**"I shall have peace, as leafy trees are peaceful  
when the rain bends down the bough."**

— Sara Teasdale, Pulitzer Prize-winning poet, at rest in Bellefontaine Cemetery

## Bellefontaine Cemetery

The power of water once created a problem at Bellefontaine Cemetery. Working with nature solved it.

The two-lane Calvary Avenue is all that separates Bellefontaine Cemetery and Arboretum from its immediate neighbor, Calvary Cemetery. Both cemeteries lie within 5 miles of the Mississippi River.

Established in 1849 and with a total of 314 acres, Bellefontaine is three-quarters as large as Calvary. Its rolling hillsides and meandering swales are graced by stately post oaks, as old as 250 years, along with many other trees up to 170 years old. They've helped Bellefontaine Cemetery earn its Level III Arboretum Accreditation from ArbNet, the international community of arboreta and tree professionals.

As seen from a bird's point of view flying along the Mississippi River, the two cemeteries together create one 800-acre forest in an urban desert.

"This tree canopy is really important for birds during

migration, who can drop out of the sky to avoid storms, and fuel up for their journey," said Shank. "They really need that fatty, high protein insect larvae found on these oak leaf canopies. Places like Bellefontaine and Calvary serve as a very important purpose as a refuge."

Bellefontaine is also committed to cultivating native plant communities on its grounds.

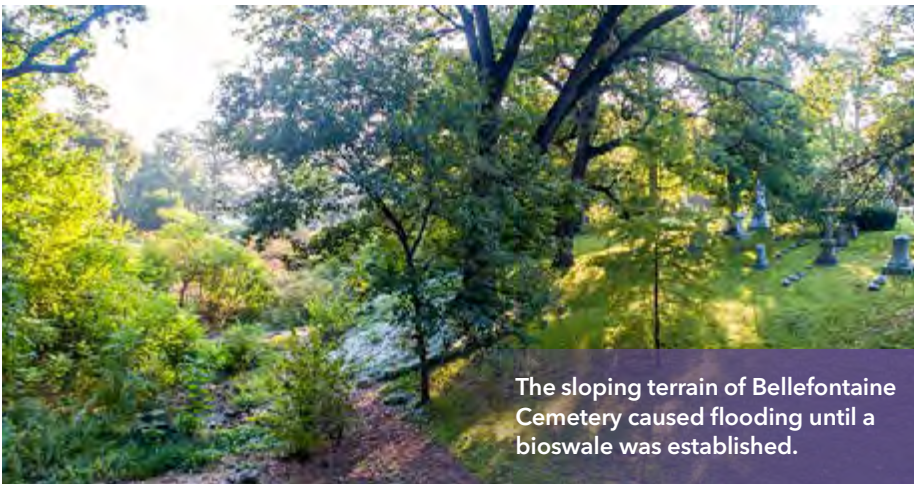
"One of the things in our 100-year master plan is developing some of these native landscapes, as an extension of the natural world around us and a connection to the Mississippi flyway," said Michael Garret, Bellefontaine's director of horticulture and curator of living collections.

Native landscape is especially apparent in Evergreen Meadow on the northeast side. It's both a site for a conservation project and green burials — an environmentally sustainable process where bodies are not prepared with chemicals and interred in biodegradable vessels. A winding trail invites visitors to





Majestic trees and patches of tickseed sunflower grow in Bellefontaine Cemetery, providing a welcome connection with nature among the monuments.



The sloping terrain of Bellefontaine Cemetery caused flooding until a bioswale was established.



Bellefontaine Cemetery is a haven of nature within view of an industrialized environment.

explore the area, which is immersed in Missouri native flora — within sight of a modern industrial landscape.

“When everything’s in bloom you get this strong contrast between the Missouri native ecosystems and industry,” Garret observed. “We need that stuff as part of our lives, but we also really need this, too. It’s part of our connection to the land.”

The steeply sloped terrain in this part of the cemetery did create one significant problem, however. Stormwater runoff threatened Broadway Boulevard, a major throughfare running along Bellefontaine’s east border below.

Any rain event over a quarter- to half-inch sent water rushing down the hill. It washed unabated over the mowed turf grass and impervious service road to flood Broadway, disrupting traffic, eroding the hillside, and creating damage potential for the industrial structures beyond.

The answer was to leverage nature itself to create the solution — a bioswale. It was the result of a cooperative project between the cemetery, MDC, and the Metropolitan Sewer District (MSD).

Shank organized MDC funding and technical assistance to select and install water-loving native plants. A stormwater retention structure was engineered by MSD. The cemetery pulverized the unused service road, which now mimics a rocky creek bed. The collective effort was a success.

“It had an immediate impact on the flooding and the reduction of the mass quantities of runoff from up above,” said Garrett.

“The bioswale really is functioning as we hoped it would,” Shank said. “The native plants act as a living sponge to absorb storm water with their root systems. So, now that bioswale is slowing down the flow of water, absorbing it, and pooling it at the bottom, where we installed plants that need those wet conditions.”

Storm clouds come, and the rain bends down the boughs of Bellefontaine Cemetery. And in doing so, the water yields up its force, bringing peace to the boulevard below.



## "From the darkness cometh the light."

— Lucy Delaney, petitioner for African American freedom, at rest in Greenwood Cemetery

### Greenwood Cemetery

Three-and-a-half miles west of Calvary and Bellefontaine — the distance a bird might fly in eight minutes — Greenwood Cemetery laid in darkness for a quarter century. It was choked in the clutches of an herbaceous invader.

Thirty-one-acre Greenwood Cemetery sits along St. Louis Avenue, a quiet street in the small north St. Louis suburb of Hillsdale. The cemetery was established in 1874 by a German caretaker from nearby St. Peters Cemetery. It was an entrepreneurial venture to provide African Americans with their own place of rest. They were denied burial in white cemeteries.

By 1993, profits from Greenwood were down. The cemetery was not making the money it had in years past, and so the owner at the time abandoned it. The cemetery fell to neglect and disinvestment. Nonnative bush honeysuckle and winter creeper invaded. They aggressively multiplied and spread unchecked for years, closing out the sun, completely engulfing Greenwood Cemetery. The stories on its stones were silenced.

"It was just a jungle; you couldn't see a single headstone. It was 15-20 feet tall," said Raphael Morris. "You couldn't take two steps in here. It was just that dense."

Morris and his wife, Shelley, are the heart of the Greenwood Cemetery Preservation Association, which they formed to save the cemetery. The couple has devoted the last eight years of their lives to bringing Greenwood out of darkness.

Both Raphael and Shelly have relatives buried in Greenwood — aunts, uncles, grandparents, cousins. Their connections are personal.

"This is my passion now. It was almost like a calling for me, this is where I'm supposed to be," said Raphael.

The retired couple began their work in 2015. All tools needed — chainsaws, loppers, mowers — were initially funded

Shelley Morris cleans a grave plot in Greenwood Cemetery. Both she and her husband, Raphael, have relatives at rest there.



from their own pockets. Eventually, donations to the association allowed the couple to purchase a riding mower to replace their hand-pushed one. Almost daily, Raphael labored to clear and fight back the bush honeysuckle, while Shelley took on the role of Greenwood historian, making records of those at rest there. More than 6,000 of the cemetery's stones tell stories of people who lived part of life outside the light of freedom.

The couple was making progress, in time clearing about 10 acres. Yet the task seemed overwhelming. They contacted MDC for assistance. Erin Shank recognized the dual potential of Greenwood; to restore the cemetery and to create a valuable natural space.

"Our goal is to get the cemetery back to a spot ecologically where it can function as an urban forest," said Shank. "It does have a real role to play as wildlife habitat, especially for birds, insects, and small mammals. And to provide storm water absorption, along with shade, and mitigate heat island effects by sequestering carbon."





Shank arranged a cooperative agreement with the association and procured an MDC grant of nearly \$30,000 to fund AmeriCorps work teams. The AmeriCorps workers spent seven months in 2022 and 2023 cutting and clearing the honeysuckle.

"AmeriCorps has really been instrumental in the turnaround of the cemetery," said Raphael. "We were able to clear sections that hadn't been maintained for 30 years."

Forest ReLeaf of Missouri has also donated native trees for reforestation. Shank said that eventually, the goal at Greenwood is to establish a tree canopy that will provide shade for many years to come.

There is still work to be done, but dramatic progress has been made, and continues through the passionate dedication of the Morriszes. The signs of nature are returning.

"When you come out here early on a Saturday morning, chances are you might see deer running through the cemetery; foxes, a couple of coyotes, owls, and hawks flying around. All sorts of nature in action," said Raphael.

"You might also see a patch of beautiful flowers native to Missouri," Shelley added. She notices more people are walking in the cemetery for recreation now that it's opened up.

"Greenwood is a place where people in this community can come out and be outdoors on this sacred ground," said Shank.

Thanks to the work of Raphael and Shelley Morris, and others, the darkness is gone. Stories have voice, and light has come again to Greenwood Cemetery.

Shelley and Raphael Morris have devoted the last eight years of their lives to restoring Greenwood Cemetery. They've helped both to create a space for nature and bring to light the stories of those buried there.



Raphael and Shelley Morris work to clear of weeds and invasive plants from the headstones. The efforts of the Morriszes and other volunteers have dramatically transformed the cemetery.

## "Eventually, everything connects."

— Charles Eames, designer, architect, filmmaker,  
at rest in Calvary Cemetery

Calvary, Bellefontaine, and Greenwood cemeteries are havens for native plants and pollinators, trees, and wildlife. They perform essential ecological functions for the manufactured, urban environment that surrounds them. And as in times past, they offer the public a way to connect back with the land.

We celebrate those beneath the stones, but ultimately, these cemeteries give rest and peace to the living. Both people and nature. The cycle of life is about life recycled. ▲

*Dan Zarlenga is MDC's media specialist for the St. Louis Region.*

**Due to recent storm damage, both Bellefontaine and Calvary cemeteries are closed until further notice to accommodate necessary clean up and repairs. Check their websites for more information.**

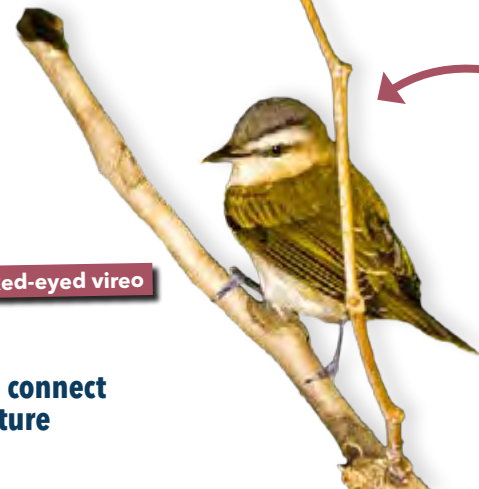


# Get Outside

in

# AUGUST

→ Ways to connect with nature



Red-eyed vireo

## SOUTHEAST REGION

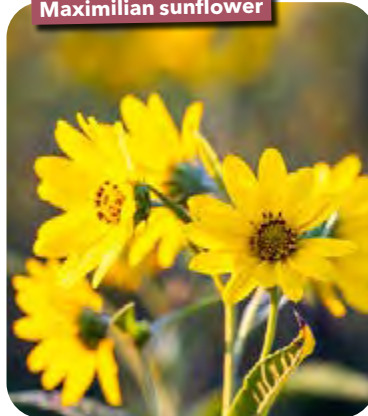
### Nature Center at Night: Meet K-9 Agent Tex

Friday • Aug. 4 • 6-7 p.m.  
Cape Girardeau Nature Center  
2289 County Park Drive, Cape Girardeau,  
MO 63701

Registration not required. For more information, call 573-290-5218 or visit [short.mdc.mo.gov/4dx](http://short.mdc.mo.gov/4dx). All ages.

Corporal Alan Lamb and K-9 Tex are one of nine K-9/handler teams within the Missouri Department of Conservation. They're tasked with enforcing laws related to conservation and public safety, assisting with search and rescue operations, and meeting Missouri's citizens. This is your opportunity to learn more about K-9 Tex, his amazing abilities, and how he and Cpl. Lamb protect our fish, forests, and wildlife.

Maximilian sunflower



### You are My Sunshine

Most people recognize sunflowers when they see them, with their bright yellow petals and flattened dark centers. There are 16 species of *Helianthus* in Missouri. The late-summer bloom time for most species of sunflowers corresponds with the reproduction cycle of goldfinches, who rely on the flower to feed their growing nestlings. It's also a familiar flower in food plots, especially dove fields. Learn more about Missouri's sunflowers at [short.mdc.mo.gov/4dG](http://short.mdc.mo.gov/4dG).

### Daytime Flyers

Eight-spotted foresters are one of the few moths that fly during the daytime. These spiffy, fast-darting, black-and-white flyers are present for the second time in Missouri woodlands in August. The earlier brood was in spring. You can find them where wooded areas meet open areas. Like butterflies, these moths feed on flower nectar.



Eight-spotted forester

MOTH: DONNA BRUNET

## Natural Events to See This Month

Here's what's going on in the natural world.



Eastern snapping turtle eggs hatch.



Striped bass and walleye head for cold water.

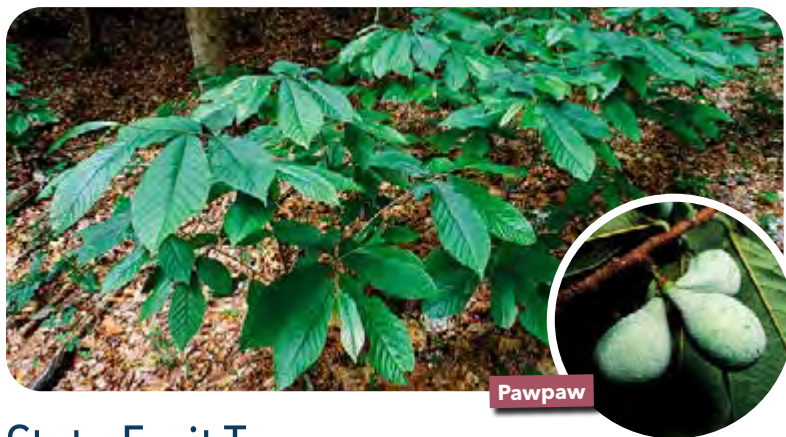


Blue-winged teal return.



## Bird Listening

Rarely seen but commonly heard, red-eyed vireos are one of the few birds that sing on hot, humid summer afternoons. The song, very helpful for locating this hard-to-see bird, is a monotonous series of two-, three-, or four-syllable whistles, with alternating up- and down-slurred phrases. The call is a *vray* or *tjay*. To learn more, visit [short.mdc.mo.gov/4dN](https://short.mdc.mo.gov/4dN).



Pawpaw

## State Fruit Tree

Did you know Missouri has an official state fruit tree? In 2019, the Missouri legislature designated the pawpaw as Missouri's state fruit tree. Learn to identify and locate the trees now, so you can watch for the ripening fruits in September. Pawpaw trees grow in colonies and resemble large shrubs or small trees with a slender trunk and broad crown. Leaves are 6-12 inches long and flowers are drooping, dark reddish-purple with an odor of fermenting grapes. The sweet fruit can be eaten raw or baked. To learn more about the pawpaw, visit [short.mdc.mo.gov/4dp](https://short.mdc.mo.gov/4dp).

VIRTUAL

## Native Plants: What's Blooming?

Saturday • Aug. 26 • 10-11 a.m.

Location: Online only

Registration required by Aug. 23. To register, call 888-283-0364 or visit [short.mdc.mo.gov/4df](https://short.mdc.mo.gov/4df).

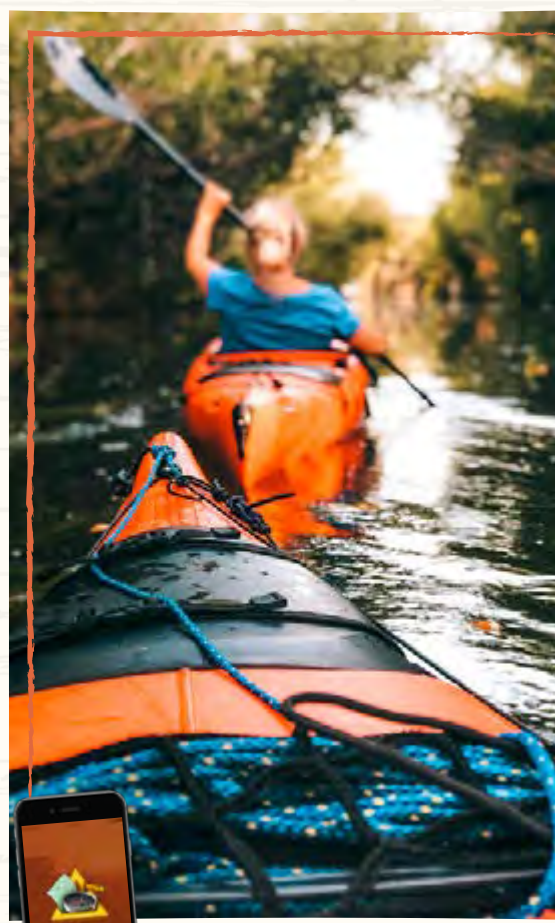
Ages 18 and up.

Native plants are an integral part of Missouri's ecosystems' health and diversity. Expand your native knowledge with this plant identification course to put a name to all the wildflowers emerging across Kansas City.



## RECONNECT WITH NATURE

Adventure can happen anywhere. Download the free **MO Outdoors** app for great places to go birding near you.



Available on the  
App Store

Download for  
Android



# Places to Go

## CENTRAL REGION

### Rudolf Bennett Conservation Area

A highly educated place to horse around

by Larry Archer

✧ There are few ways better to learn about nature than to be out in the middle of it, but one could spend a lifetime in central Missouri's Rudolf Bennett Conservation Area (CA) and never know more about nature than the area's namesake.

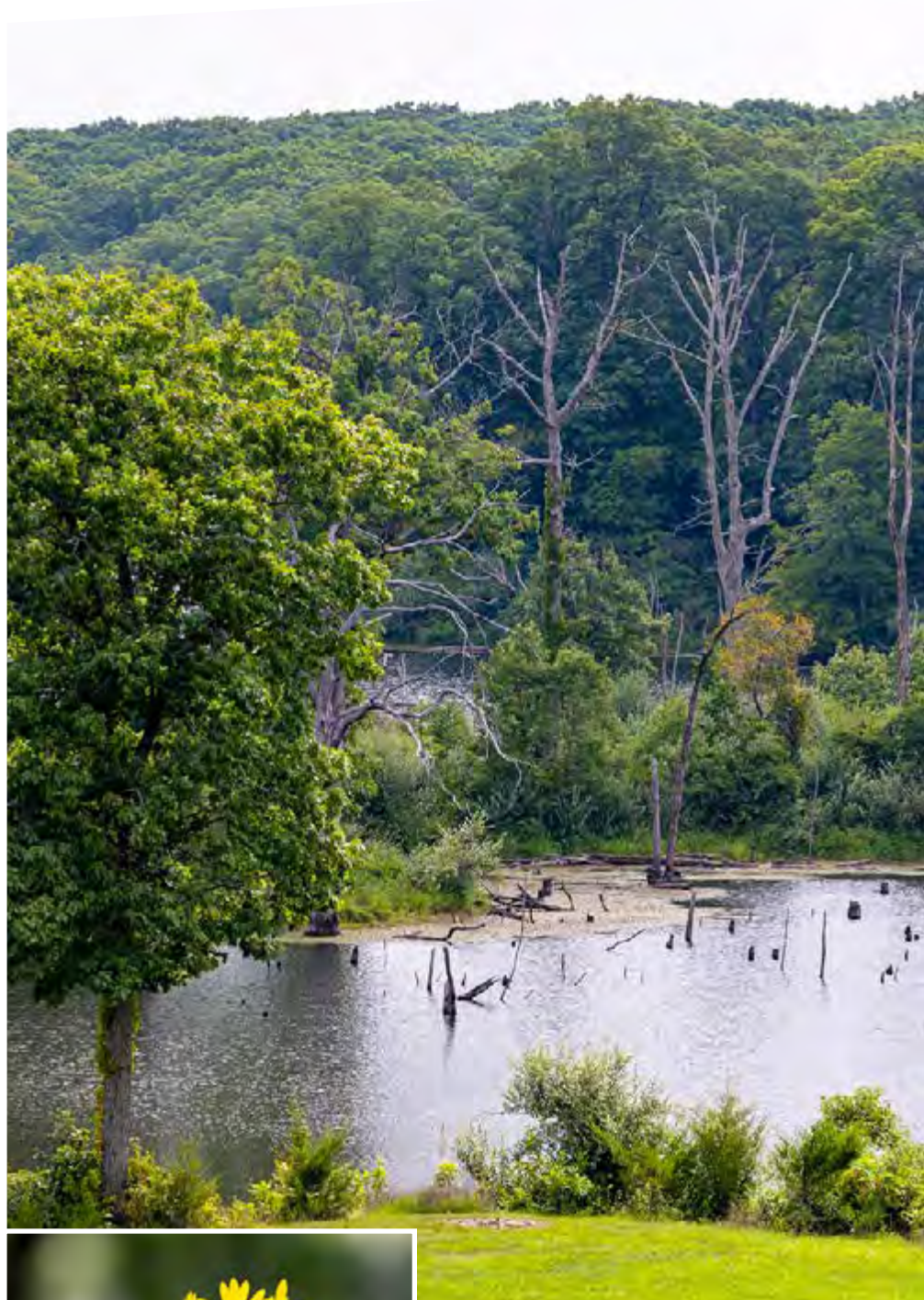
The area, which consists of 3,575 mostly forested acres in Boone, Howard, and Randolph counties, was named for Rudolf Bennett, a Harvard-educated professor of zoology at the University of Missouri and an early influence in the formation of the Missouri Conservation Commission and Missouri Department of Conservation.

"He was kind of a big player in the conservation movement," said MDC District Supervisor Chris Newbold. "Certainly, here in Missouri, but really even throughout the country."

With the 48-acre lake and more than 17 miles of stream frontage, there's plenty of opportunities for fishing, but even with these resources available, fishing takes a back seat — or, more appropriately, a back saddle — to the area's most common summertime usage, horseback riding.

The area's Moniteau Trail, a 12.5-mile multiuse trail, regularly attracts horseback riders, many of whom also take advantage of the area's six camping areas, Newbold said.

"Camping and horseback riding are probably the two biggest uses we get in the summertime."



Rosinweed

"In the fall, it's pretty popular for deer hunting. In the springtime, it's a pretty good birdwatching area with forest migratory birds going through, and it gets a lot of spring turkey hunting use."

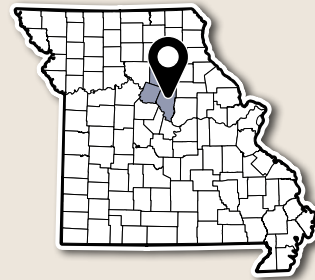
—District Supervisor  
Chris Newbold

DAVID STONNER





At 48 acres, Bennitt Lake offers great opportunities for fishing as well as paddling. Several primitive campsites dot the western shore of the lake for beautiful sunrise views. Late summer blooming rosinweed (inset) can be found along Rudolf Bennitt CA's miles of wooded hiking, biking and horseback riding trails.



## RUDOLF BENNITT CONSERVATION AREA

consists of 3,575 acres in Boone, Howard, and Randolph counties. From Columbia, take Highway 63 north 19 miles, Route F west 5 miles, Route T north 2.75 miles, and then County Road 2930 west 0.50 mile to the area.

39.2475, -92.4626

[short.mdc.mo.gov/4qv](http://short.mdc.mo.gov/4qv) 573-815-7900

### WHAT TO DO WHEN YOU VISIT



**Birdwatching** Included in the Great Missouri Birding Trail ([short.mdc.mo.gov/4PW](http://short.mdc.mo.gov/4PW)). The eBird list of August birds recorded at Rudolf Bennitt CA is available at [short.mdc.mo.gov/4Pm](http://short.mdc.mo.gov/4Pm).



**Camping** Designated camping sites; individual campsites; open camping.



**Fishing** Black bass, catfish, crappie, sunfish.



**Hunting Deer and turkey** Regulations are subject to annual changes. Refer to MDC's regulation page online at [short.mdc.mo.gov/Zjw](http://short.mdc.mo.gov/Zjw).

Also **dove** and **squirrel**



**Trails** Moniteau Trail (12.5 miles of multiuse trail — hike, bike, horse); 1.5 miles of improved and service roads. Trails closed to bicycle and horseback riding during firearms deer and spring turkey hunting seasons.



**Trapping** Special-use permit required.

### WHAT TO LOOK FOR WHEN YOU VISIT



Three-toed box turtle



Red-eyed vireo



Yellow lady slipper



Gray treefrog





## Thirteen-lined Ground Squirrel

*Ictidomys tridecemlineatus*

### Status

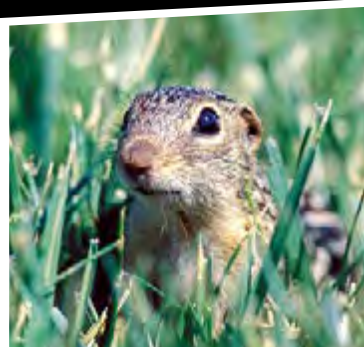
Species of conservation concern

### Size

Length: 7 to 12½ inches

### Distribution

Localized populations in northwest Missouri



### Did You Know?

The thirteen-lined ground squirrel prefers to live in open areas where the grass is short. Its home is a burrow in the ground with several outside entrances. The main entrance is open during the day, but the squirrel plugs the opening at night with sod or grass.

The thirteen-lined ground squirrel is small and slender, with 13 alternating light and dark stripes running along its back and sides from head to rump. The light stripes are yellowish to white, and the dark ones are blackish to reddish brown, broken by a series of light spots. It has large eyes and small ears set low on the head, and a slightly bushy tail about half as long as the body.



### FOODS

They forage for both plant and animal foods, including grains and garden vegetables as well as cicadas, crickets, and grasshoppers. In autumn, they eat until their body weight doubles with stored fat.



### ECOSYSTEM CONNECTIONS

Their digging aerates the soil, conditions it for plant growth, and may attract earthworms, insects, and other soil-building organisms. They also help distribute seeds.



### LIFE CYCLE

A true hibernating mammal, the thirteen-lined ground squirrel appears above ground only three to four months out of the year. Adult thirteen-lined ground squirrels mate after emerging from hibernation in the spring. The gestation period lasts about 28 days, and young are born about the middle of May in litters of four to 14. The young leave the nest at about five to six weeks and lead independent lives near their home burrow after a week or two.



# Outdoor Calendar

❖ MISSOURI DEPARTMENT OF CONSERVATION ❖

## Free MO Hunting and MO Fishing Apps

MO Hunting makes it easy to buy permits, electronically notch them, and Telecheck your harvest. MO Fishing lets you buy permits, find great places to fish, and ID your catch. Get both in Android or iPhone platforms at [short.mdc.mo.gov/Zi2](https://short.mdc.mo.gov/Zi2).



## FISHING

### Black Bass

Impounded waters and non-Ozark streams:  
Open all year

Most streams south of the Missouri River:

- ▶ Catch-and-Keep:  
May 27, 2023–Feb. 29, 2024

### Bullfrog, Green Frog

June 30 at sunset–Oct. 31, 2023

### Nongame Fish Giggling

Impounded waters, sunrise to sunset:  
Feb. 16–Sept. 14, 2023

Streams and impounded waters,  
sunrise to midnight:  
Sept. 15, 2023–Feb. 15, 2024

### Paddlefish

On the Mississippi River:  
Sept. 15–Dec. 15, 2023

### Trout Parks

State trout parks are open seven days a week  
March 1 through Oct. 31.

Catch-and-Keep:  
March 1–Oct. 31, 2023

Catch-and-Release:  
Nov. 10, 2023–Feb. 12, 2024

## TRAPPING

### Opossum, Raccoon, Striped Skunk

Only foot-enclosing traps and cage-type traps  
may be used.

Aug. 1–Oct. 15, 2023

*\*Only hunters selected through a random drawing  
may participate in these hunting seasons.*

For complete information about seasons, limits,  
methods, and restrictions, consult the *Wildlife  
Code of Missouri* at [short.mdc.mo.gov/Zib](https://short.mdc.mo.gov/Zib).  
Current hunting, trapping, and fishing regulation  
booklets are available from local permit vendors  
or online at [short.mdc.mo.gov/ZZf](https://short.mdc.mo.gov/ZZf).

## HUNTING

### Black Bear\*

Oct. 16–25, 2023

### Bullfrog, Green Frog

June 30 at sunset–Oct. 31, 2023

### Coyote

Restrictions apply during April, spring turkey  
season, and firearms deer season.

Open all year

### Crows

Nov. 1, 2023–March 3, 2024

### Deer

Archery:  
Sept. 15–Nov. 10, 2023  
Nov. 22, 2023–Jan. 15, 2024

Firearms:

- ▶ **New!** Early Antlerless Portion  
(open areas only): Oct. 6–8, 2023
- ▶ Early Youth Portion (ages 6–15):  
Oct. 28–29, 2023
- ▶ November Portion:  
Nov. 11–21, 2023
- ▶ **New!** CWD Portion (open areas  
only): Nov. 22–26, 2023
- ▶ Late Youth Portion (ages 6–15):  
Nov. 24–26, 2023
- ▶ Late Antlerless Portion (open areas only):  
Dec. 2–10, 2023
- ▶ Alternative Methods Portion:  
Dec. 23, 2023–Jan. 2, 2024

### Doves

Sept. 1–Nov. 29, 2023

### Elk\*

Archery:  
Oct. 21–29, 2023

Firearms:  
Dec. 9–17, 2023

### Groundhog (Woodchuck)

May 8–Dec. 15, 2023

### Opossum, Raccoon, Striped Skunk

Aug. 1–Oct. 15, 2023

### Pheasant

Youth (ages 6–15):  
Oct. 28–29, 2023

Regular:  
Nov. 1, 2023–Jan. 15, 2024

### Quail

Youth (ages 6–15):  
Oct. 28–29, 2023

Regular:  
Nov. 1, 2023–Jan. 15, 2024

### Rabbits

Oct. 1, 2023–Feb. 15, 2024

### Sora, Virginia Rail

Sept. 1–Nov. 9, 2023

### Squirrels

May 27, 2023–Feb. 15, 2024

### Teal

Sept. 9–24, 2023

### Turkey

Archery:  
Sept. 15–Nov. 10, 2023  
Nov. 22, 2023–Jan. 15, 2024

Firearms:

- ▶ Fall: Oct. 1–31, 2023

### Waterfowl

See the Migratory Bird and Waterfowl  
Hunting Digest or visit [short.mdc.mo.gov/ZZx](https://short.mdc.mo.gov/ZZx)  
for more information.

### Wilson's (Common) Snipe

Sept. 1–Dec. 16, 2023

### Woodcock

Oct. 15–Nov. 28, 2023





*Serving nature and you<sup>®</sup>*



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@moconservation

August is like the Sunday of summer. As sunrises come a little later and nights a little sooner, you know the lazy days of summer are ending. Be like this polyphemus moth and seize these remaining days! Missouri's second largest moth only flies through August, so it will be taking its final laps around your porch lights. Get out there and enjoy your favorite summer activities. What will you discover?

📷 by **Noppadol Paothong**

**Free to Missouri households**

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